\NORTH CAROLINA DIVISION OF AIR QUALITY

Application Review

Issue Date:

Region: Wilmington Regional Office
County: Columbus
NC Facility ID: 2400093
Inspector's Name: Mark Hedrick
Date of Last Inspection: 08/12/2016
Compliance Code: 3 / Compliance - inspection

Facility Data

Applicant (Facility's Name): Hexion Inc. - Acme Operations

Facility Address:
Hexion Inc. - Acme Operations
333 Neils Eddy Road
Riegelwood, NC 28456

SIC: 2869 / Industrial Organic Chemicals,nec
NAICS: 325199 / All Other Basic Organic Chemical Manufacturing

Facility Classification: Before: Title V **After:** Title V
Fee Classification: Before: Title V **After:** Title V

Permit Applicability (this application only)

SIP: 02D .0503, 2D .0515, 2D .0516, 2D .0521, 2D .1100, 2D .1109, 2D .1111, 2D .1806, 2Q .0317
NSPS: N/A
NESHAP: 40 CFR 63 Subparts F, G, H, FFFF, and DDDDD
PSD: N/A
PSD Avoidance: Yes
NC Toxics: Yes
112(r): Yes
Other: TV Permit Renewal

Contact Data

Facility Contact	Authorized Contact	Technical Contact
Tom Buller Regional EHS Manager (910) 274-5921 333 Neils Eddy Road Riegelwood, NC 28456	Ronald Bazinet Site Leader (910) 655-2263 333 Neils Eddy Road Riegelwood, NC 28456	Tom Buller Regional EHS Manager (910) 274-5921 333 Neils Eddy Road Riegelwood, NC 28456

Application Data

Application Number: 2400093.16A
Date Received: 08/31/2016
Application Type: Renewal
Application Schedule: TV-Renewal

Existing Permit Data
Existing Permit Number: 01394/T47
Existing Permit Issue Date: 01/06/2017
Existing Permit Expiration Date: 05/31/2017

Total Actual emissions in TONS/YEAR:

CY	SO2	NOX	VOC	CO	PM10	Total HAP	Largest HAP
2015	0.0200	63.60	27.07	2.23	1.67	22.69	19.81 [Methanol (methyl alcohol)]
2014	0.0200	63.55	37.58	2.22	1.98	29.10	26.45 [Methanol (methyl alcohol)]
2013	0.0200	21.69	35.95	2.29	2.23	27.78	26.18 [Methanol (methyl alcohol)]
2012	0.0300	23.25	40.35	3.62	2.56	30.46	29.41 [Methanol (methyl alcohol)]
2011	0.0200	21.13	39.85	3.35	2.40	30.37	29.05 [Methanol (methyl alcohol)]

Review Engineer: Betty Gatano

Review Engineer's Signature: **Date:**

Comments / Recommendations:
Issue 01394/T48
Permit Issue Date:
Permit Expiration Date:

1. Purpose of Application

Hexion Inc. – Acme Operations (Acme) currently holds Title V Permit No. 01394T47 with an expiration date of May 31, 2017 for a chemical manufacturing facility in Riegelwood, Columbus County, North Carolina. The permit application for a permit renewal without modification was received on August 31, 2016, or at least nine months prior to the expiration date. Therefore, Air Permit No. 01394T47 shall not expire until the renewal permit has been issued or denied, per the application shield in General Condition 3.K. All terms and conditions of the existing permit shall remain in effect until the renewal permit has been issued or denied.

2. Facility Description

Acme is a chemical manufacturing facility that produces formaldehyde, resin, hexamethylene-tetramine (hexamine), and various specialty chemicals. The processes at the plant are divided into three distinct chemical manufacturing processes:

- Formaldehyde Chemical Manufacturing Process Unit (CMPU)[1] – This process converts methanol into formaldehyde through a catalytic oxidation process. The CMPU includes three reactors and four adsorption columns for recovering the product, as well as storage tanks and a formaldehyde loading rack. Formaldehyde is one of the chemicals listed in Table 1 of 40 CFR Part 63 Subpart F, making this CMPU subject to the "NESHAP from the Synthetic Organic Chemical Manufacturing Industry for Process Vents, Storage Vessels, Transfer Operations, and Wastewater," 40 CFR Part 63 Subpart G. Rules 40 CFR Part 63 Subparts F, G, and H are collectively referred to as the "Hazardous Organic NESHAP" or HON.

- Special Project Miscellaneous Organic Chemical Manufacturing Process Unit (MCPU)[1] – Various products, including ketone resins, can be manufactured in this process area using batch reactors. This MCPU is subject to the "NESHAP for Miscellaneous Organic Chemical Manufacturing, 40 CFR 63 Subpart FFFF, also referred to the "Miscellaneous Organic NESHAP" or MON.

- Hexamine CMPU[1] – Hexamine is formed by reacting formaldehyde and ammonia. The CMPU includes a reactor, evaporator, crystallizers, and a centrifuge. Acme can sell the hexamine in slurry form or can dry the product through a centrifugal process. Hexamine is one of the chemicals listed in Table 1 of 40 CFR Part 63 Subpart F, making this CMPU also subject to the HON.

The plant also includes raw material handling and storage operations, utility operations (including steam production and wastewater treatment), and finished product loadout activities. As a chemical manufacturing facility, the existing major source threshold for the facility under the Prevention of Significant Deviation (PSD) permitting program is 100 tons per year (tpy). The facility has an enforceable limit on sulfur dioxide (SO_2) emissions, which enables it to be classified as an existing minor PSD source. Potential emissions of all other PSD-regulated pollutants, including greenhouse gases, are less than the PSD major source thresholds. Acme remains a Title V facility because potential hazardous air pollutants (HAP) emissions are greater than 10 tpy of individual HAPs and 25 tpy of total HAPs.

[1] The term CMPU is used to refer to chemical process subject to HON, while MCPU is used to refer to chemical process subject to the MON.

3. History/Background/Application Chronology

Permit History since Last Permit Renewal

June 5, 2012 — Title V permit renewed. Air Permit No. 01394T43 issued with an expiration date of May 31, 2017. Several other permit applications were incorporated with the application for permit renewal. The following changes were made to the permit under the permit renewal/modification:

- Added a facility-wide emissions limitation on SO_2 of 100 tpy to be an existing minor source under the PSD permitting program pursuant to 15A NCAC 02D .0530.
- Added existing sources that were omitted from the permit, including a liquid hexamine loading rack, resin product truck loading operation, and publicly-owned treatment works (POTW).
- Revised wastewater feed flow rates to the hexamine air stripper (ID Nos. ES-001-02f) based on performance testing conducted on August 11, 2010.
- Added operating parameters for the existing catalytic oxidizer (ID No. CD-001-02b) based on performance testing conducted on December 14, 2010.

November 5, 2013 — Air Permit No. 01394T44 issued as a minor modification. The modification included the addition of three new storage tanks, the repurposing of one tank from formaldehyde to storm water storage, the additional use of three resin distillate tanks as wastewater feed tanks, and the removal of three existing storage tanks.

February 4, 2015 — Air Permit No. 01394T45 issued as an administrative modification for a name change.

March 3, 2016 — Air Permit No. 0139T46 issued as a significant modification. Alternative monitoring under 40 CFR 63 Subpart G for catalytic oxidizer (ID No. CD-002-01a) was added to the permit. Permitted toxic air pollution limits for emission sources subject to a Maximum Achievable Control Technology (MACT) standard were remove under this modification.

January 6, 2017 — Air Permit No. 0139T47 issued as a minor modification to replace a cooling tower. Operation of the existing cooling tower (ID No. ES-003-05) is allowed only until the commencement of operation of the new cooling tower (ID No. ES-003-07).

Application Chronology

August 31, 2016	Received application for permit renewal.
September 6, 2016	Sent acknowledgment letter indicating that the application for permit renewal was complete.
September 15, 2016	Betty Gatano e-mailed questions to Taylor Loftis, consultant for the facility.
October 11, 2016	Taylor Loftis responded via e-mail with answers to some of the questions.
October 26, 2016	Taylor Loftis responded via e-mail with remaining answers.
November 4, 2016	Betty Gatano and Taylor Loftis exchanged a series of e-mails regarding the subcategory of boiler (ID No. ES-001-01) under MACT Subpart DDDDD. Mr. Loftis indicated the boiler should be considered a gas 1 unit, which meant that No. 5 and No. 6 fuel oil could no longer be permitted as fuel for the boiler. Mr. Loftis stated in an e-mail that No. 5 and No. 6 fuel oil should be removed from the permit entirely under this permit renewal.
November 23, 2016	Draft of permit and permit review forwarded for comments.
December 28, 2016	Comments received from Booker Pullen, Permitting Supervisor.
January 6, 2017	Air Permit No. 0139T47 issued as a minor modification to replace a cooling tower. The draft permit renewal was revised to account for these changes.
January 11, 2017	A revised version of the draft and permit review was forwarded to Taylor Loftis for comments.
February 1, 2017	Comments received from Taylor Loftis.
February 2, 2017	Permit sent to public notice.

4. Permit Modifications/Changes and TVEE Discussion

Because of its length, the table of changes is provided in Attachment 1. The following changes were made to the Title V Equipment Editor (TVEE):

- Removed No. 5 and No. 6 fuel oils from the natural gas/ No. 2 fuel oil-fired boiler (ID No. ES-001-01).
- Removed No. 5 and No. 6 fuel oils from the natural gas/ No. 2 fuel oil-fired back-up boiler (ID No. ES-001-01T).

5. Applicable Regulations

Acme is subject to the regulations listed below on a source-by-source basis. Regulations that are applicable to multiple emission sources and those that are applicable facility-wide are discussed below in Section 6. The permit will be updated to reflect the most current stipulations for all applicable regulations.

A. Natural Gas/No. 2 Fuel Oil-Fired Boiler (ID No. ES-001-01)

- 15A NCAC 02D .0503, Particulates from Fuel Burning Indirect Heat Exchangers – The boiler (ID No. ES-001-01) is subject to this rule. Allowable PM emissions are determined from the equation, $E = 1.090(Q)^{-0.2594}$, where E equals the allowable emission limit for PM in pounds per million Btu and Q equals the maximum heat input in million Btu per hour. With a Q of 24 million Btu/hr, the PM allowable emissions equal 0.48 pounds per million Btu/hr.

  Based on emission factors of the fuels burned in the boilers, the maximum PM emissions expected from the boilers are provided as follows:
  - No. 2 fuel oil - 0.024 pounds per million Btu based on an emission factor for PM of 3.3 pounds per 10^3 gallons and a fuel heating value of 140,000 Btu/gallon.[2]
  - Natural gas – 0.007 pounds per million Btu as provided in the spreadsheet.[3]

  No monitoring, recordkeeping, or reporting is required to ensure compliance for this rule. Other than removing No. 5 and No. 6 fuel oil as noted above, no changes to the permit are required under this permit renewal. Continued compliance is expected.

- 15A NCAC 02D .0516, Sulfur Dioxide from Combustion Sources - The boiler (ID No. ES-001-01) is subject to this rule. No monitoring, recordkeeping, or reporting is required when firing natural gas or No. 2 fuel oil because of the low sulfur content of the fuels. These fuels are inherently low enough in sulfur that continued compliance is expected.

  No. 5 and No. 6 fuel oil were removed from the permit under this permit renewal, and the permit condition was updated to reflect this change.

- 15A NCAC 02D .0521, Control of Visible Emissions - The boiler was manufactured after July 1, 1971 and must not have visible emissions of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d). No monitoring, recordkeeping or reporting is required when firing No. 2 or natural gas in the burner. Continued compliance is anticipated.

  No. 5 and No. 6 fuel oil were removed from the permit under this permit renewal, and the permit condition was updated to reflect this change.

- 15A NCAC 02D .1109, Case-by-Case MACT – The Case-by-Case MACT requirements for Natural Gas No. 2 Fuel Oil-Fired Boiler (ID No. ES-001-01) were added to the permit under

[2] Emission factor for No. 2 fuel oil is from the DAQ's "Fuel Oil Combustion Emission Calculator Revision G" (11/05/2012).
[3] Natural gas emission factor is from the DAQ's "Natural Gas Combustion Emission Calculator Revision M" (06/22/2015).

Air Quality Permit No. 01394T42 issued on December 16, 2010. Under the Case-by-Case MACT, Acme must conduct annual boiler inspections and maintenance and an annual tune-up for No. 2 fuel oil and natural gas. Continued compliance is anticipated.

No. 5 and No. 6 fuel oil were removed from the permit, and the permit condition was updated to reflect this change

Acme must comply with the Case-by-Case MACT standards for this boiler until May 19, 2019. Beginning on May 20, 2019, the facility must comply with the standards specified in "NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters," 40 CFR 63 Subpart DDDDD (MACT Subpart DDDDDD). This date was determined based on the promulgation date of MACT Subpart DDDDD, as per 15A NCAC 02Q .0526(o)(2), which states, in part, the following:

> *The Director shall establish a compliance date in the revised permit that assures that the owner or operator shall comply with the promulgated standard within a reasonable time, but no longer than eight years after such standard is promulgated or eight years after the date by which the owner or operator was first required to comply with the emission limitation established by permit, whichever is earlier.*

- 15A NCAC 02D .1111, Maximum Achievable Control Technology – The natural gas/No. 2 fuel oil-fired boiler (ID No. ES-001-01) will be subject to the NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers, 40 CFR Part 63 Subpart DDDDD beginning May 20, 2019, as noted above. The requirements under MACT Subpart DDDDD are being added at this time per 40 CFR 63.56(b), which states "if the Administrator promulgates a relevant emission standard under section 112(d) or (h) of the Act that is applicable to a source after the date a permit is issued pursuant to §63.52 or §63.54, the permitting authority must incorporate requirements of that standard in the title V permit upon its next renewal."

  The boiler is considered an existing boiler under the MACT because it was constructed prior to June 4, 2010. Acme intends to only combust No. 2 fuel oil in this boiler during natural gas curtailment. As such, the boiler falls into the "Units Designed to Burn Gas 1 Fuels" subcategory under the MACT. The following is a summary of the requirements for this boilers (i.e., existing boiler; Gas 1 subcategory; >10 million Btu per hr) under MACT Subpart DDDDD.

  - Conduct a one-time energy assessment and an initial tune-up as specified in 40 CFR 63.7500(a) and 63.7510(e).
  - Conduct a tune-up of the boiler annually as specified in Table 3 of 40 CFR Part 63 Subpart DDDDD.
  - Operate and maintain any affected source, including associated air pollution control equipment and monitoring equipment, in a manner consistent with safety and good air pollution control practices for minimizing emissions.
  - Maintain records of Initial Notification or Notification of Compliance Status, semiannual compliance report and annual reports.
  - Maintain records for five years, with at least two years onsite.

- Submit semiannual compliance report that includes periods of noncompliance if applicable.

The permit will be updated to add the MACT Subpart DDDDD condition, with a compliance date of May 20, 2019.

B. Formaldehyde Process (ID No. ES-002-01)
- Three reactors (ID Nos. ES-002-01.1, ES-002-01.2, and ES-002-01.3)
- Ambient air blowers (ID No. ES-002-01.4)
- Two product recovery absorption columns (ID Nos. ES-002-01.6 and ES-002-01.8)

All of the above emission sources are controlled by an electrically-heated catalytic oxidizer (ID No CD-002-01a)

Section 2.1.B refers to the formaldehyde process as the "formaldehyde CMPU." However, more emission sources than specified under 2.1.B are included in the formaldehyde CMPU, as denoted in the Equipment Table in Section 1.0 of the permit. As specified in 40 CFR 63.111, a CMPU includes "air oxidation reactors and their associated product separators and recovery devices; reactors and their associated product separators and recovery devices; distillation units and their associated distillate receivers and recovery devices; associated unit operations; associated recovery devices; and any feed, intermediate and product storage vessels, product transfer racks, and connected ducts and piping. A chemical manufacturing process unit includes pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, instrumentation systems, and control devices or systems." Thus, the term formaldehyde CMPU is replaced with formaldehyde process in this permit section to be consistent with terminology in Section 1.0 of the permit and 40 CFR Part 63 Subpart G.

- 15A NCAC 02D .0521, Control of Visible Emissions - The formaldehyde process (ID No. ES-002-01) was manufactured as of July 1, 1971 and must not have visible emissions of more than 40 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(c). No visible emissions are anticipated from these emission sources. No monitoring, recordkeeping, or reporting is required, and continued compliance is expected.

- 15A NCAC 02D .1111, MACT – The formaldehyde process (ID No. ES-002-01) is subject to the National Emission Standards for Organic Hazardous Air Pollutants (NESOHAP) from the Synthetic Organic Chemical Manufacturing Industry (SOCMI) for Process Vents, Storage Vessels, Transfer Operations, and Wastewater, 40 CFR Part 63, Subpart G. Emission sources in formaldehyde process (ID No. ES-002-01) are considered Group 1 process vents under the HON. In accordance with 40 CFR 63.113(a)(2), the facility is required to reduce emissions of total organic hazardous air pollutants by 98 weight percent or to a concentration of 20 ppmv, whichever is less stringent. An electrically heated catalytic oxidizer (ID No. CD-002-01a) is used to control emissions from the affected Group I process vents to meet this emission standard. Under the MACT, Acme is allowed one excursion of the emission limit per semiannual reporting period. Each excursion beyond the allowed exception is considered a violation.

MACT Subpart G requires facilities using catalytic oxidizers for compliance with the emission limit to monitor temperature upstream and downstream of the catalyst and determine and maintain a temperature rise across the catalyst bed. Under Air Permit No. 01394T46 issued on March 3, 2016, the facility requested and was allowed to use alternative monitoring for the catalytic oxidizer, per 40 CFR 63.151(g). Acme must monitor the temperature upstream of the catalyst bed and check the activity of catalyst annually under the approved alternative monitoring.

The permit condition was modified under this permit renewal to be consistent with Section 2.1 G.3, which specifies requirements for Group 1 process vents in Hexamine production facility subject to MACT Subpart G. Continued compliance is anticipated.

- 15A NCAC 02D .1111, MACT – The formaldehyde process is also subject to the following MACTs that are applicable to multiple emission sources. Please see Section 6 below for a discussion of these MACTs:
  - NESOHAP from the SOCMI for Process Vents, Storage Vessels, Transfer Operations, and Wastewater, 40 CFR Part 63, Subpart G – Each vapor collection system and closed-vent system is subject to the leak detection and repair provisions of this subpart.
  - NESOHAP from the SOCMI for Equipment Leaks, Subpart H – This regulation applies to pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, instrumentation systems, and control devices or closed vent systems that are part of the affected source subject to 40 CFR Part 63, Subpart G.

C. <u>Two Methanol Storage Tanks (ID Nos S4 and S5) controlled by an electrically-heated catalytic oxidizer (ID No. CD-002-01a)</u>

- 15A NCAC 02D .1111, MACT – These tanks are subject to the NESOHAP from the SOCMI for Process Vents, Storage Vessels, Transfer Operations, and Wastewater, 40 CFR Part 63, Subpart G. These tanks are considered Group 1 storage vessels. Acme complies with the storage vessel requirements under 40 CFR 63.119(b)(2) by routing emissions from the tanks through closed vent system to the electrically heated catalytic oxidizer, which reduces the inlet emissions of total organic HAP by 95 percent or greater.

  Acme ensures compliance by monitoring the time the catalytic oxidizer is bypassed. The total aggregate amount of time by passed cannot exceed 240 hours per calendar year.

  No changes to the monitoring, recordkeeping or reporting are required under the permit renewal, and continued compliance is anticipated.

- 15A NCAC 02D .1111, MACT – The methanol tanks are also subject to the following MACTs that are applicable to multiple emission sources. Please see Section 6 below for a discussion of these MACTs:
  - NESOHAP from the SOCMI for Process Vents, Storage Vessels, Transfer Operations, and Wastewater, 40 CFR Part 63, Subpart G – Each vapor collection system and closed-vent system is subject to the leak detection and repair provisions of this subpart.
  - NESOHAP from the SOCMI for Equipment Leaks, Subpart H – This regulation applies to pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers,

instrumentation systems, and control devices or closed vent systems that are part of the affected source subject to 40 CFR Part 63, Subpart G.

D. Five Formaldehyde Storage Tanks (ID Nos ES-004-T6, ES-004-T9, ES-004-T10, ES-004-T11, and ES-004-T12) with associated scrubber (ID No. CD-002-01b)

- 15A NCAC 02D .1111, MACT – These storage tanks are subject to the NESOHAP from the SOCMI for Process Vents, Storage Vessels, Transfer Operations, and Wastewater, 40 CFR Part 63, Subpart G. These storage tanks have been identified as Group 2 storage vessels, meaning that they do not meet the criteria for design storage capacity and stored-liquid maximum true vapor pressure specified in Table 5 under MACT Subpart G for storage vessels at existing sources or in Table 6 for storage vessels at new sources. As specified in 40 CFR 63.119(a)(3) for Group 2 storage vessels, Acme is only required to keep the storage vessel dimensions and capacity readily available. No other monitoring or recordkeeping is required. Continued compliance is anticipated.

- 15A NCAC 02D .1111, MACT – The formaldehyde tanks are also subject to the following MACTs that are applicable to multiple emission sources. Please see Section 6 below for a discussion of these MACTs:
  - NESOHAP from the SOCMI for Process Vents, Storage Vessels, Transfer Operations, and Wastewater, 40 CFR Part 63, Subpart G – Each vapor collection system and closed-vent system is subject to the leak detection and repair provisions of this subpart.
  - NESOHAP from the SOCMI for Equipment Leaks, Subpart H – This regulation applies to pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, instrumentation systems, and control devices or closed vent systems that are part of the affected source subject to 40 CFR Part 63, Subpart G.

E. Formaldehyde Transfer Rack equipped with a vacuum vapor collection system (ID No. ES-002-02) controlled by a scrubber (ID No. CD-002-01b)

- 15A NCAC 02D .1111, MACT – The formaldehyde transfer rack is subject to the NESOHAP from the SOCMI for Process Vents, Storage Vessels, Transfer Operations, and Wastewater, 40 CFR Part 63, Subpart G. This transfer operation has been identified as a Group 2 transfer operation, meaning the rack annually loads less than 0.65 million liters of liquid products that contain organic hazardous air pollutants with a rack weighted average vapor pressure greater than or equal to 10.3 kilopascals. As specified in 40 CFR 63.126(c) for Group 2 transfer operations, Acme is required to keep the analysis demonstrating the design and actual annual throughput of the transfer rack, documentation of the weight-percent organic HAP's in the liquid loaded (e.g., analyses of the material and engineering calculations), and an analysis documenting the annual rack weighted average HAP partial pressure of the transfer rack. No other provisions for transfer racks apply to the Group 2 transfer rack.

  The permit condition was modified under this permit renewal to be consistent with Section 2.1 G.5, which specifies requirements for Group 2 transfer rack in the Hexamine production facility subject to MACT Subpart G. Continued compliance is anticipated.

- 15A NCAC 02D .1111, MACT – The formaldehyde transfer rack is also subject to the following MACTs that are applicable to multiple emission sources. Please see Section 6 below for a discussion of these MACTs:
    - NESOHAP from the SOCMI for Process Vents, Storage Vessels, Transfer Operations, and Wastewater, 40 CFR Part 63, Subpart G – Each vapor collection system and closed-vent system is subject to the leak detection and repair provisions of this subpart.
    - NESOHAP from the SOCMI for Equipment Leaks, Subpart H – This regulation applies to pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, instrumentation systems, and control devices or closed vent systems that are part of the affected source subject to 40 CFR Part 63, Subpart G.

F. Special Projects MCPU (ID No. ES-002-05) consisting of the following:

- One resin catch tank (ID No. ES-002-05a)
- Two reactors (ID Nos. ES-002-05a and ES-002-05c) controlled by condensers (ID Nos CD-002-5b and CD-002-05c)
- Eight storage vessels (ID Nos. ES-T8, ES-T17, ES-T23, ES-T24, ES-T25, ES-T26, ES-T43, and ES-T51);
- One resin product truck loading operation (ID No. ES-002-05d);
- Process Water Tank (ID No. ES-T33);
- Wastewater Storage Tank (ID No. ES-002-05ww1); and,
- Wastewater Steam Stripper (ID No. ES-002-05ww2) with an associated electrically-heated catalytic oxidizer (ID No. CD-002-01a).

- 15A NCAC 02D .1111, MACT – The resin catch tank (ID No. ES-002-05a) and the two reactors (ID Nos. ES-002-05a and ES-002-05c) are NESHAP for Miscellaneous Organic Chemical Manufacturing, 40 CFR Subpart FFFF (also called the MON). These emission sources are considered Group 2 batch process vents as defined under 40 CFR 63.2550, and they maintain their Group 2 status by ensuring collective uncontrolled organic HAP emissions from all of the batch process vents are less than 10,000 pounds per calendar year. The only requirements under the MON are recordkeeping and reporting requirements. No changes to the recordkeeping or reporting are required under the permit renewal, and continued compliance is anticipated.

- 15A NCAC 02D .1111, MACT – The eight storage vessels (ID Nos. ES-T8, ES-T17, ES-T23, ES-T24, ES-T25, ES-T26, ES-T43, and ES-T51) and the process water tank (ID No. ES-T33) are subject to the MON. These emission sources are considered Group 2 tanks as defined under 40 CFR 63.2550 because each tank has a capacity less than 10,000 gallons and/or stores a material with a maximum true vapor pressure of total HAP greater than or equal to 6.9 kilopascals. Although tanks ES-T26 and ES-T43 have a capacity greater than 10,000 gallons, they store material having vapor pressure less than 6.9 kilopascals, as denoted in the Notice of Compliance Status Report, dated October 2008. Thus, they maintain the Group 2 status. The permit condition was updated to add references. Continued compliance is anticipated.

- 15A NCAC 02D .1111, MACT – The resin product truck loading operation (ID No. ES-002-05d) is subject to the MON. This emission source is considered a Group 2 transfer rack as defined under 40 CFR 63.2550 because it loads less than 0.65 million liters/year of liquids

that contain organic HAP with a rack-weighted average partial pressure greater than or equal to 1.5 psia. Acme has to maintain records of actual throughput and the type of material transferred through the rack. The permit was updated to add references and to add a requirement to submit an advanced notification of process change. Continued compliance is anticipated.

- 15A NCAC 02D .1111, MACT – The wastewater storage tank (ID No. ES-002-05ww1) and the wastewater steam stripper (ID No. ES-002-05ww2) are subject to the MON. The resin wastewater stream includes sufficient methanol concentrations to meet the definition of a Group 1 process wastewater stream pursuant to 40 CFR 63.2485(c).[4] The process wastewater requirements of the MON reference the requirements of the HON pursuant to 40 CFR 63, Subpart G. Compliance with the MON is achieved with the wastewater storage tank meeting the requirements of 40 CFR 63.133(a)(1) and the downstream air stripper, which removes and treats methanol as required in 40 CFR 63.138(d). The air stripper also removes and treats formaldehyde and hexamine entrained in the wastewater stream, which are not MON-affected compounds. Additional information about the affected wastewater process is provided below:
  - The wastewater storage tank (ID No. ES-002-05ww1) is a fixed roof tank that is not used to heat wastewater, treat wastewater by means of an exothermic reaction or by sparging the tank coatings. The fixed roof tank meets the requirements of 40 CFR 63.113(a)(1). No testing, inspection, or maintenance requirements apply to this tank.
  - The wastewater air stripper (ID No. ES-002-05ww2) meets the requirements of 40 CFR 63.138(d). Neither a design evaluation nor a performance test is required for affected sources using the design steam stripper option. Pursuant to 40 CFR 62.143(b) and 40 CFR 63, Subpart G, Table 12, Acme continuously monitor and record the following:
    - The steam flow rate; and,
    - The wastewater feed mass flow rate; and,
    - The wastewater feed temperature OR the column operating temperature.
  - Pursuant to 40 CFR 63.138(a)(5), gases vented from the process wastewater treatment process must be controlled as specified in 40 CFR 63.139. Acme uses the existing catalytic oxidizer (ID No. CD-002-01a) to control methanol in the vent stream of the wastewater air stripper. The catalytic oxidizer must reduce the total organic compound emissions (less methane and ethane), or total organic HAP emissions by at least 95% by weight in accordance with 40 CFR 63.139(c)(1)(i). Pursuant to 40 CFR 62.143(e)(1) and 40 CFR 63, Subpart G, Table 13, Acme ensures compliance by monitoring the temperature upstream of the catalyst bed and checking the activity of the catalyst annually under the approved alternative monitoring.

  Section 2.1 G.4 of the current permit specifies requirements for wastewater from the ketone aldehyde CMPU. According to Taylor Loftis, consultant for Acme, the section refers to wastewater from a ketone-formaldehyde resin processes that were subject to MON. These processes have been shut down and Acme does not foresee producing the ketone aldehyde product again. Reference to the ketone aldehyde CMPU will be removed from the permit under this permit renewal.

- 15A NCAC 02D .1111, MACT – The Special Projects MCPU (ID No. ES-002-05) is also subject to the following MACTs that are applicable to multiple emission sources. Please see

[4] Methanol concentration: 75,000 ppmw, Short-Term Flow: 10 gal/min, Monthly Flow: 10,000 gal/month.

Section 6 below for a discussion of these MACTs:

- NESOHAP from the SOCMI for Process Vents, Storage Vessels, Transfer Operations, and Wastewater, 40 CFR Part 63, Subpart G – Each vapor collection system and closed-vent system is subject to the leak detection and repair provisions of this subpart.
- NESOHAP from the SOCMI for Equipment Leaks, Subpart H – This regulation applies to pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, instrumentation systems, and control devices or closed vent systems that are part of the affected source subject to 40 CFR Part 63, Subpart G.

G. Hexamine CMPU consisting of the following:

- Hexamine production facility (ID Nos. ES-001-02.1 through ES-001-02.4, ES-001-02.6, and ES-001-02.8-1 through ES-001-02.8-4) with an associated natural gas/LPG-fired catalytic oxidizer (ID No. CD-001-02b)
- Air stripper for hexamine byproduct water (ID No. ES-001-02f) with an associated natural gas/LPG-fired catalytic oxidizer (ID No. CD-001-02b)
- Hexamine dryer (ID No. ES-001-04) with bagfilter (ID No. CD-001-02d)
- Granular hexamine pneumatic transfer system (ID No. ES-001-05) with bagfilter (ID No. CD-001-02d)
- Pneumatic free-flow product transfer system (ID No. ES-001-06) with cartridge filter (ID No. CD-001-02c)
- Free-flow (pulverized) hexamine bagging operation (ID No. ES-001-07) with cartridge filter (ID No. CD-001-02e)
- Liquid hexamine loading rack (ID No. ES-001-08)
- Hexamine rerun tank (ID No. ES-001-02.8-5)
- Hexamine distillation feed tank (ID No. ES-001-02.8-6)

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – The hexamine dryer (ID No. ES-001-04), the granular hexamine pneumatic transfer system (ID No. ES-001-05), the pneumatic free-flow product transfer system (ID No. ES-001-06), and the free-flow (pulverized) hexamine bagging operation (ID No. ES-001-07) are subject to 02D .0515. Acme must conduct monthly visible inspections of the duct work and bagfilter/cartridge filters and annual internal inspections of the bagfilter/cartridge filters for structural integrity. Recordkeeping and reporting are also required. No changes to the permit are required, and continued compliance is expected.

- 15A NCAC 02D .0521, Control of Visible Emissions – The following emission sources are subject to 02D .0521.
  - The hexamine production facility (ID Nos. ES-001-02.1 through ES-001-02.4, ES-001-02.6, and ES-001-02.8-1 through ES-001-02.8-4) and the free-flow (pulverized) hexamine bagging operation (ID No. ES-001-07) were manufactured as of July 1, 1971 and must not have visible emissions of more than 40 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(c).
  - The hexamine dryer (ID No. ES-001-04), the granular hexamine pneumatic transfer system (ID No. ES-001-05), and the pneumatic free-flow product transfer system (ID No. ES-001-06) were manufactured after July 1, 1971 and must not have visible emissions of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d).

To ensure compliance, Acme must make weekly visible emission observations of the hexamine production facility and monthly visible observations of the hexamine dryer, the granular hexamine pneumatic transfer system, the pneumatic free-flow product transfer system, and the free-flow (pulverized) hexamine bagging operation. Associated recordkeeping and reporting are also required.

The permit will be update to reflect the most current permitting language under this permit renewal. No other changes to the permit are required, and continued compliance is anticipated.

Acme is also required to record when a plume of nitrogen oxides (aka a NOx plume) is observed from the Hexamine production facility. Wright Chemical, the facility owner at that time, adjudicated the initial TV permit partly based on their concern regarding the visible emissions monitoring requirements for the Hexamine CMPU Catalytic Oxidizer. The DAQ ultimately decided to exclude the presence of a NOx plume (brownish color) from the visible emission requirements. This decision was primarily based on the facility's air modeling results, which showed concentrations were below NOx ambient levels. Although the presence of a NOx plume must be noted in the logbook, a NOx plume does not indicate a violation of 15A NCAC .02D .0521. The requirement to document presence of a NOx plume was added under Air Permit No. 0139T31 issued on July 30, 2004.[5] No changes to this permit requirement are needed under this permit renewal.

- 15A NCAC 02D .1111, MACT – The hexamine production facility (ID Nos. ES-001-02.1 through ES-001-02.4, ES-001-02.6, and ES-001-02.8-1 through ES-001-02.8-4) is subject to the NESOHAP from the SOCMI for Process Vents, Storage Vessels, Transfer Operations, and Wastewater, 40 CFR Part 63, Subpart G. Emission sources in the hexamine production facility are considered Group 1 process vents under the HON. In accordance with 40 CFR 63.113(a)(2), the facility is required to reduce emissions of total organic hazardous air pollutants by 98 weight percent or to a concentration of 20 ppmv, whichever is less stringent. A natural gas/LPG-fired catalytic oxidizer (ID No. CD-001-02b) is used to control emissions from the affected Group I process vents to meet this emission standard. Under the MACT, Acme is allowed one excursion of the emission limit per semiannual reporting period. Each excursion beyond the allowed exception is considered a violation.

  Acme must monitor the temperature upstream of the catalyst bed and check the activity of catalyst annually under the approved alternative monitoring.

  The permit condition was modified to be consistent with Section 2.1 B.2 (new numbering), which specifies requirements for Group 1 process vents in formaldehyde process subject to MACT Subpart G. Continued compliance is anticipated.

- 15A NCAC 02D .1111, MACT – The air stripper for hexamine byproduct water (ID No. ES-001-02f) is subject to the HON, as a Group 1 process wastewater stream pursuant to 40 CFR 63.132(c). Acme has elected to comply with the HON with an air stripper that meets the requirements for air stripper design and operation in 40 CFR 63.138(d). The air stripper further meets the fraction removal (Fr) rate of 31% (weight %) for methanol as specified in

[5] Judy Lee (07/30/2004)

Table 9 of 40 CFR 63 Subpart G. Total organic HAP emissions from the air stripper are reduced via the natural gas/LPG-fired catalytic oxidizer (ID No. CD-001-02b) by 95 percent by weight or greater in accordance with 40 CFR 63.139(c)(1)(i). Additional information about the affected wastewater process is provided below:

- Pursuant to 40 CFR 62.143(d), Acme elected to comply with Item 3 in Table 12 of 40 CFR 63 Subpart G and requested another treatment option for compliance with the wastewater provisions. Specifically, they requested to use an air stripper and to monitor the wastewater feed flow rate and temperature and the air flow rate to ensure compliance.
- Pursuant to 40 CFR 63.138(a)(5), gases vented from the process wastewater treatment process must be controlled as specified in 40 CFR 63.139. Pursuant to 40 CFR 62.143(e)(1) and 40 CFR 63, Subpart G, Table 13, Acme ensures compliance by monitoring the temperature upstream of the catalyst bed and checking the activity of catalyst annually.

- 15A NCAC 02D .1111, MACT – The hexamine loading rack is subject to the NESOHAP from the SOCMI for Process Vents, Storage Vessels, Transfer Operations, and Wastewater, 40 CFR Part 63, Subpart G. This transfer operation has been identified as a Group 2 transfer operation, meaning the rack annually loads less than 0.65 million liters of liquid products that contain organic hazardous air pollutants with a rack weighted average vapor pressure greater than or equal to 10.3 kilopascals. As specified in 40 CFR 63.126(c) for Group 2 transfer operations, Acme is required to keep the analysis demonstrating the design and actual annual throughput of the transfer rack, documentation of the weight-percent organic HAP's in the liquid loaded (e.g., analyses of the material and engineering calculations), and an analysis documenting the annual rack weighted average HAP partial pressure of the transfer rack. No other provisions for transfer racks apply to the Group 2 transfer rack.

- 15A NCAC 02D .1111, MACT – The hexamine CMPU is also subject to the following MACTs that are applicable to multiple emission sources. Please see Section 6 below for a discussion of these MACTs:
  - NESOHAP from the SOCMI for Process Vents, Storage Vessels, Transfer Operations, and Wastewater, 40 CFR Part 63, Subpart G – Each vapor collection system and closed-vent system is subject to the leak detection and repair provisions of this subpart.
  - NESOHAP from the SOCMI for Equipment Leaks, Subpart H – This regulation applies to pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels, bottoms receivers, instrumentation systems, and control devices or closed vent systems that are part of the affected source subject to 40 CFR Part 63, Subpart G.

H. Three Cooling Towers (ID Nos. ES-003-03, ES-003-06, and ES-003-05 or ES-003-07)

Lined Pond at Wastewater Treatment and associated wastewater streams (ID No. ES-005)

Nine (9) Wastewater Storage Vessels (ID No. ES-007.1, ES-007.2, ES-007.3, and ES-007.5 through ES-007.10)

Note that cooling tower ID No. ES-003-07 was permitted under Air Permit No. 01394T47. The operation of the existing cooling tower (ID No. ES-003-05) is allowed only until the commencement of operation of the new cooling tower (ID No. ES-003-07).

- 15A NCAC 02D .0515, Particulates from Miscellaneous Industrial Processes – The three cooling towers (ID Nos. ES-003-03, ES-003-06, and ES-003-05 or ES-003-07) are subject to 02D .0515. No monitoring or reporting is required for these sources, but Acme must maintain production records such that the process rates for the cooling towers can be determined. The permit condition was modified to remove reference to the types of materials and finishing, which are not applicable to these emission sources. No other changes to the permit are required, and continued compliance is expected.

- 15A NCAC 02D .0521, Control of Visible Emissions –The three cooling towers (ID Nos. ES-003-03, ES-003-06, and ES-003-05 or ES-003-07) were manufactured after July 1, 1971 and must not have visible emissions of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d). No monitoring, recordkeeping, or reporting is required for these sources, and continued compliance is anticipated.

- 15A NCAC 02D .1100, Control of Air Toxics – This regulation is state-enforceable only. The non-MACT emission sources in this section are subject to 02D .1100. More detail on NC Air Toxics is provided in Section 8.

- 15A NCAC 02D .1111, MACT – Wastewater tanks (ID Nos. ES-007.1, ES-007.2, ES-007.3, ES-007.5, and ES-007.6) are subject to the NESOHAP from the SOCMI for Process Vents, Storage Vessels, Transfer Operations, and Wastewater, 40 CFR Part 63, Subpart G. These tanks are considered Group 2 wastewater tanks, and the only requirement for these emission sources are recordkeeping under 40 CFR 63.147(b)(8). Continued compliance is anticipated.

I. Back-up, Natural Gas/No. 2 Fuel Oil-Fired Boiler (ID No. ES-001-01T)

The back-up boiler was added the Air Quality Permit No. 1394T39 issued on May 9, 2008.

- 15A NCAC 02D .0503, Particulates from Fuel Burning Indirect Heat Exchangers – The boiler (ID No. ES-001-01) is subject to this rule. Allowable PM emissions are determined from the equation, $E = 1.090(Q)^{-0.2594}$, where E equals the allowable emission limit for PM in pounds per million Btu and Q equals the maximum heat input in million Btu per hour. With a Q as calculated in the table below, the PM allowable emissions equal 0.39 pounds per million Btu/hr.

Emission Source	Date Added	Heat Input of the Emission Sources (mm Btu/hr)	Maximum Heat Input (mm Btu/hr)	Emission limit (lb/mm Btu)
Natural Gas/No. 2 Fuel Oil-Fired Boiler (ID No. ES-001-01)	Included in Initial TV Permit No. 1394T30 issued 12/18/2003	24	54	0.39
Back-up, Natural Gas/No. 2 Fuel Oil-Fired Boiler (ID No. ES-001-01T)	Permit No. 1394T39 issued 05/09/2008	30		

Based on emission factors for each of the fuels burned in the boilers, the maximum PM emissions expected from the boilers are provided as follows:

- No. 2 fuel oil - 0.024 pounds per million Btu based on an emission factor for PM of 3.3 pounds per 10^3 gallons and a fuel heating value of 140,000 Btu/gallon.[6]
- Natural gas – 0.007 pounds per million Btu as provided in the spreadsheet.[7]

No monitoring, recordkeeping, and reporting are required to ensure compliance for this rule. Other than removing No. 5 and No. 6 fuel oil as noted above, no changes to the permit are required under this permit renewal. Continued compliance is expected.

- 15A NCAC 02D .0521, Control of Visible Emissions - The boiler was manufactured after July 1, 1971 and must not have visible emissions of more than 20 percent opacity when averaged over a six-minute period, except as specified in 15A NCAC 02D .0521(d). No monitoring, recordkeeping or reporting is required when firing No. 2 or natural gas in the burner. Continued compliance is anticipated.

  No. 5 and No. 6 fuel oil were removed from the permit, and the permit condition was updated to reflect this change.

- 15A NCAC 02D .1100, Control of Air Toxics – This regulation is state-enforceable only. The temporary boiler is not subject to MACT and is subject to 02D .1100. More detail on NC Air Toxics is provided in Section 8.

- 15A NCAC 02Q .0317, Avoidance Conditions – Acme has accepted the following avoidance conditions for the back-up boiler (ID No. ES-001-01T):
  - 15A NCAC 02D .0524, New Source Performance Standards.
  - 15A NCAC .02D .0530, Prevention of Significant Deterioration.
  - 15A NCAC .02D .1109, Case-by-Case MACT.

  More detail on these avoidance conditions are provided in Section 7.

J. Publicly-Owned Treatment Works (ID No. ES-POTW) consisting of Two Biotreatment Areas, a Pre-Equalization Tank, a Post-Equalization Tank, a Digester, and a Sand Filter

- 15A NCAC 02D .1100, Control of Air Toxics – This regulation is state-enforceable only. This non-MACT emission source is subject to 02D .1100. More detail on NC Air Toxics is provided in Section 8.

6. Regulations that Are Applicable to Multiple Emission Sources

As specified in Sections 2.2 and 2.3 of the permit, Acme is subject to the following regulations that are either applicable to multiple emission sources or are applicable facility-wide.

2.2 A. HON and MON Emission Sources

The regulations listed below are found in Section 2.2 A of the permit and are applicable to multiple emission sources at the facility.

[6] Emission factor for No. 2 fuel oil is from the DAQ's "Fuel Oil Combustion Emission Calculator Revision G" (11/05/2012).
[7] Natural gas emission factor is from the DAQ's "Natural Gas Combustion Emission Calculator Revision M" (06/22/2015).

- Section 2.2 A.1 – Emission Sources Subject to Leak Detection and Repair Requirements (LDAR) under MACT Subpart H – Emission sources subject to these requirements are process equipment containing gases, vapors, or fluids with at least five percent by weight organic HAP content. The regulation contains specific procedures for leak detection and repair of process equipment in HAP service to prevent HAPs from entering the environment via leaking equipment including pumps, compressors, agitators, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, connectors, surge control vessels (ID Nos. ES-001-2.8-5 and ES-001-02.8-6), bottoms receivers, instrumentation systems, and control devices or closed vent system systems, subject to Subpart G including the formaldehyde process (ID No. ES-002-Fug-1) and the Hexamine Production Facility (ID No. ES-001-Fug03). The special projects MCPU (ID No. ES-002-Fug-02), which is subject to the equipment leak provisions under the MON, complies with the MON requirements for equipment leaks by complying with MACT Subpart H, in accordance with 40 CFR 63.2480(a) and Table 6.1.b of the MON.

  Acme is required to monitor all equipment via instrumentation, visual inspection, or both. The frequency of monitoring depends on the type of equipment as shown in the table below. Further, Acme must maintain records of all visual and instrument monitoring, leaking equipment, and repairs. Leaks and leak repairs are reported.

Type of Equipment	Reference	Monitoring Frequency
Pumps in light liquid	40 CFR 63.163	Monitored by instrument monthly. Monitored visually weekly.
Compressors	40 CFR 63.164	As needed - Each compressor has to be equipped with a seal system that includes a barrier fluid system and that prevents leakage of process fluid to the atmosphere, except as indicated in the rule. The compressor must be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.
Pressure relief devices	40 CFR 63.165	As needed - The emission standard requires an instrument reading of less than 500 ppm above background.
Sampling connection systems	166	As needed - Each sampling connection equipment shall be equipped with a closed-purge, closed-loop or closed vent system.
Open ended valve or lines	167	As needed – each opened valve or line shall be sealed at all times except at times listed in rule.
Valves in gas/vapor/light liquid service	168	The facility has to monitor according to the following scheduled based on the percentage of valves leaking: Two percent or greater leaking – monitor monthly < two percent leaking – monitor quarterly <1 percent leaking – monitor every two quarters < 0.5 percent leaking – monitor every four quarters.
Pumps, valves, etc. in heavy liquid services	169	These sources are to be monitored within 5 calendar days if evidence of a potential leak to the atmosphere is found by visual, audible, olfactory, or any other detection method.
Surge Control Vessels and Bottoms Receivers	170	As needed – Each surge control vessel or bottoms receiver meeting criteria in Table 2 or 3 of 40 CFR 63 Subpart H have to be vented back into the process or to a control device.
Closed Vent Systems and control devices	172	The facility has to conduct annual inspections for leaks in accordance with 40 CFR 63.172(f) and (g). The facility controls emissions with condenser and absorbers as specified in 40 CFR 63.172(b) or catalytic oxidizers as specified in 40 CFR 63.172(c).).

Type of Equipment	Reference	Monitoring Frequency
Agitators in light liquid service	173	Monitored by instrument monthly. Monitored visually weekly.
Connectors in gas/vapor liquid service	174	The facility has to monitor according to the following scheduled based on the percentage of valves leaking: >0.5 percent leaking – once per year <0.5 percent leaking – once every 2 years initially and then once every 4 years (with at least 20 percent of the valves connectors inspected annually) provided the leaking equipment remains less than 0.5 percent.

The permit condition will be modified under this permit renewal to add non-compliance statements to add weekly visible inspections for pumps in light liquid service. No other changes to the permit condition are required under this permit renewal, and continued compliance is anticipated.

- Section 2.2 A.2 – This permit condition covers leak provisions for vapor collection systems and closed-vent systems. The NESOHAP from the SOCMI for Process Vents, Storage Vessels, Transfer Operations, and Wastewater, 40 CFR Part 63, Subpart G is applicable to HON emission sources under the Formaldehyde and Hexamine CMPUs. Requirements under the Miscellaneous Organic NESHAP, 40 CFR Subpart FFFF for closed-vent system apply to the wastewater steam stripper, which is controlled via the electrically heated catalytic oxidizer (ID No. CD-002-01a). As specified in 40 CFR 63.2485(a) and Table 7.1 of the MON, facilities subject to the process wastewater provisions of the MON comply with MON by complying with requirements in the HON, including requirements for closed-vent systems under 40 CFR 63.148.

  Note that the reactors (ID No. ES-002-05b and ES-002-05c) and resin catch basis (ID No. ES-002-05a), which are controlled via condensers, are not subject to requirements for the vapor collection systems and closed-vent systems under the MON. These emission sources are considered Group 2 batch process vents and are not required to be controlled for compliance with the MON. Per 40 CFR 63.2450(e)(1), provisions for closed-vent systems apply only for those emission sources required to reduce HAPs through to any combination of control devices (except a flare) or recovery devices.

  For the closed-vent systems requirements under the HON, Acme must ensure that the emissions collection system and associated ducting/piping are not allowing emissions to unintentionally bypass the control device. Ducting requires an initial and annual leak inspections using instrumentation. Hard piping requires only initial inspection. Recordkeeping and semiannual reporting are required for all inspections, any leaks detected, and any leak repair (or why a leak was not repaired).

  No changes to the permit condition were required and continued compliance is anticipated.

2.2 B. Multiple Emission sources

The regulations listed below are found in Section 2.2 B of the permit and are applicable to multiple emission sources.

- 15A NCAC 02D .1100, Control of Toxic Air Pollutants – Certain non-MACT emission sources are subject to 02D .1100, Control of Toxic Air Pollutants. The permit contains modeled emission rates for ammonia, formaldehyde, and phenol for these non-MACT emission source. This condition is state-enforceable only. See Section 8 for further discussion regarding air toxics.

- 15A NCAC 02D .1806, Control and Prohibition of Odorous Emissions - This condition is applicable facility-wide and is state enforceable only.

- 15A NCAC 02Q .0317, Avoidance Condition – The facility has accepted permit limits for SO_2 emissions to avoid applicability to 15A NCAC 02D .0530, Prevention of Significant Deterioration. See Section 8 for further discussion on PSD.

On November 1, 2016, amendments to 15A NCAC 02D .0902 were finalized to narrow applicability of work practice standards in 15A NCAC 02D .0958 from statewide to the maintenance area for the 1997 8-hour ozone standard. This change is being made primarily because the abundance of biogenic VOC emissions in North Carolina results in ozone formation being limited by the amount of available nitrogen oxides (NOx) emissions. Provisions of the Clean Air Act require VOC requirements previously implemented in an ozone nonattainment area prior to redesignation remain in place. However, facilities outside the maintenance area counties for the 1997 8-hour ozone standard would no longer be required to comply with the work practice standards in 15A NCAC 02D .0958. Columbus County was never in nonattainment for ozone and 15A NCAC 02D .0958 is no longer applicable to facilities, including Acme, within the county. The permit condition for 15A NCAC 02D .0958 will be removed under this permit renewal.

2.3 Other Applicable Requirements

Acme is subject to the 112(r) "Prevention of Accidental Releases" requirements because it stores aqueous ammonia, anhydrous ammonia, and formaldehyde in amounts greater than the applicability threshold. A permit condition specifying applicability to 112(r) will be added to the permit during this permit renewal. Continued compliance is anticipated.

7. NSPS, NESHAPS/MACT, NSR/PSD, 112(r), CAM

NSPS

The permit currently indicates the natural gas/No. 2 fuel oil-fired back-up boiler (ID No. ES-001-01T) is subject to the "NSPS for Small Industrial, Commercial, Institutional Steam Generating Units," 40 CFR Part 60 Subpart Dc. This designation is a mistake. The facility does not intend to have this boiler onsite for more than 180 days, and thus, the boiler meets the definition of a temporary boiler under 40 CFR 60.41c. The permit will be updated to add an avoidance condition for NSPS Subpart Dc for this boiler.

MACT/GACT

Acme is subject to the following MACTs.

MACT Subparts F, G, and H (aka the HON)

The formaldehyde CMPU and parts of the hexamine CMPU are subject to the HON. As specified in 40 CFR Part 63.100(b), the provisions of Subparts F, G, and H (aka the HON) apply

to chemical manufacturing units that meet the criteria specified in 63.100(b)(1) through (3). Acme meets these criteria, as shown below:

- The CMPUs manufacture as a primary product a compound listed in Table 1 of 40 CFR 63 Subpart F (formaldehyde and hexamine).
- The CMPUs use a HAP listed in Table 2 of 40 CFR 63 Subpart F as a reactant (methanol and formaldehyde).
- Acme is a major source of HAPs.

MACT Subpart FFFF
The special projects CMPU (ID No. ES-002-05) is an existing affected source under the MON, pursuant to 40 CFR 63, Subpart FFFF. With the exception of one resin wastewater stream, Acme has determined all affected sources at the facility are "Group 2" sources with limited or no requirements. For a thorough overview of the requirements under the MON, please refer to the permit review for Air Permit No. 01394T39 issued to the facility on May 9, 2008.[8]

Case-by-Case MACT
The natural gas/No. 2 fuel oil-fired boiler (ID No. ES-001-01) is subject to the Case-by-Case MACT. Under the permit, Acme has to comply with work practice standards when firing No. 2 fuel oil and natural gas. According to the compliance report for an inspection performed on August 12, 2016, the facility is in compliance with the work practice requirements under the Case-by-Case MACT. No. 5 and No. 6 fuel oil were removed from the permit, and the permit condition was updated to reflect this change.

Acme has accepted an avoidance condition for the Case-by-Case MACT for the natural gas/No. 2 fuel oil-fired back-up boiler (ID No. ES-001-01T). To avoid the Case-by-Case MACT, the back-up boiler cannot be retained on-site for a consecutive 180 days. This permit renewal does not affect the avoidance condition, and no changes to the permit are needed.

PSD
Chemical processing plants, such as Acme, are one of the 28 listed source categories that are considered major sources under PSD if they have the potential to emit 100 tons per 12-month period or more of any regulated NSR pollutants. The facility's potential emissions are below the major source thresholds for all regulated NSR pollutants except for SO_2. Acme accepted a facility wide-emissions limit on SO_2 of 100 tpy under Air Permit No. 01394T43 issued on June 5, 2012 to be an existing minor source under the PSD permitting program. Under this permit renewal, reference to No. 5 and No. 6 fuel oil were removed from the permit condition for facility-wide PSD avoidance for SO_2 emissions. Continued compliance is anticipated.

Prior to accepting the facility-wide avoidance limit for SO_2, the facility was considered major for PSD. As a result, the facility accepted 40 tpy limits on emissions of nitrogen oxides (NO_x) and SO_2 from the temporary back-up boiler (ID No. ES-001-01T), when it was added under Air Permit No. 01394T39 issued on May 9, 2008. With the removal of No. 5 and No. 6 fuel oil, the temporary back-up boiler no longer has the potential to exceed the PSD significant emission rate for NOx. Under this permit renewal, reference to NOx emissions as well as references to No. 5 and No. 6 fuel oil were removed from the permit condition for PSD avoidance for the temporary back up boiler.

[8] Fern Paterson (05/09/2008).

112(r)
The facility is subject to Section 112(r) of the Clean Air Act requirements because it stores anhydrous ammonia, aqueous ammonia, and formaldehyde in quantities above the threshold quantities. The most recent compliance inspection for 112(r) was conducted on June 13, 2014 by Mark Hedrick of the Wilmington Regional Office (WiRO). Acme appeared to be in compliance with 112(r) at the time of inspection.

The permit does not currently include a specific permit condition for 112(r). A condition for 112(r) will be added to the permit under this permit renewal.

CAM
40 CFR Part 64 is applicable to any pollutant-specific emission unit, if the following three conditions are met:

- the unit is subject to any (non-exempt: e.g. pre November 15, 1990, Section 111 or Section 112 standard) emission limitation or standard for the applicable regulated pollutant.
- the unit uses any control device to achieve compliance with any such emission limitation or standard.
- the unit's pre-control potential emission rate exceeds either 100 tpy (for criteria pollutants) or 10/25 tpy (for HAPs).

A CAM analysis was conducted as part of the last TV permit renewal for Acme.[9] As discussed in that permit review, the facility does not include any controlled emission sources with an uncontrolled potential emissions greater than Title V major source thresholds, and therefore is not subject to the CAM provisions in 15A NCAC 2D .0614.

8. Facility Wide Air Toxics

Emission limits under 15A NCAC 02D .1100 were removed from the permit for MACT sources with the issuance of Air Permit No. 01394T46 on May 3, 2016. As part of the permit review for that permit, the DAQ conducted a facility-wide evaluation demonstrating that the removal of the emission limits did not present "an unacceptable risk to human health," in accordance with G.S. 143-215. 107(b) as codified on May 1, 2014.

Emission limits for non-MACT sources remain in the permit. Acme ensures compliance by operating only one boiler (ID Nos. ES-001-01 or ES-001-01T) at a given time and maintaining records of TAP emissions from the non-MACT sources. The permit condition was updated to remove No. 5 and No. 6 fuel oils. Continued compliance is anticipated.

9. Facility Emissions Review

There is no change in Title V potential emissions under this permit renewal. Actual emissions for 2011 through 2015 are reported in the header of this permit review.

[9] Mark Cuilla (June 15, 2012).

10. Compliance Status

The most recent compliance inspection was conducted on August 12, 2016, by Mark Hedrick of the WiRO. The facility appeared to be in compliance with all applicable requirements at that time. Additionally, a signed Title V Compliance Certification (Form E5) indicating the facility was in compliance with all applicable requirements was included with the permit application.

Acme has had the following compliance issues within the past five years:

- A Notice of Deficiency (NOD) was issued on October 5, 2012 for failure to record a monthly visual inspection of the free-flow hexamine bagging operation cartridge filter (ID No. CD-001-02e).
- A Notice of Violation (NOV) was issued on November 24, 2014 for the facility for allowing one hexamine reactor to bypass natural gas/LPG-fired the catalytic oxidizer (ID No. CD-001-02b).

All NOVs and NODs have been resolved.

11. Public Notice/EPA and Affected State(s) Review

A notice of the DRAFT Title V Permit shall be made pursuant to 15A NCAC 2Q .0521. The notice will provide for a 30-day comment period, with an opportunity for a public hearing. Copies of the public notice shall be sent to persons on the Title V mailing list and EPA. Pursuant to 15A NCAC 2Q .0522, a copy of each permit application, each proposed permit and each final permit pursuant shall be provided to EPA. Also pursuant to 2Q .0522, a notice of the DRAFT Title V Permit shall be provided to each affected State at or before the time notice provided to the public under 2Q .0521 above. The state of South Carolina is within 50 miles of the facility and will be notified accordingly.

12. Other Regulatory Considerations

- A P.E. seal is NOT required for this application.
- A zoning consistency determination is NOT required for this application.
- A permit application fee is NOT required for this permit application.

13. Recommendations

The permit renewal application for Hexion Inc. - Acme Operations located in Riegelwood, Columbus County, NC has been reviewed by DAQ to determine compliance with all procedures and requirements. DAQ has determined that this facility is complying or will achieve compliance, as specified in the permit, with all requirements that are applicable to the affected sources. The DAQ recommends the issuance of Air Permit No. 01394T48.

Attachment 1
Table of Changes

Previous Permit		New Permit		Description of Changes
Page No.	**Section**	**Page No.**	**Section**	
Cover and throughout	--	Cover and throughout	--	Updated all dates and permit revision numbers.
--	Insignificant Activities List	--	Insignificant Activities List	Updated footnotes.
--	Table of Contents	--	Table of Contents	Added Section 2.3 for Section 112(r) requirements.
3 – 6	Section 1.0 Equipment List	3 – 6	Section 1.0 Equipment List	• Removed No. 5 and No. 6 fuel oil from Natural Gas/No. 2 fuel oil-fired boiler (ID No. ES-001-01). • Removed No. 5 and No. 6 fuel oil from Natural Gas/No. 2 fuel oil-fired back-up boiler (ID No. ES-001-01T). • Removed NSPS Dc label from Natural Gas/No. 2 fuel oil-fired back-up boiler (ID No. ES-001-01T). • Removed footnote specifying emission source (ID No. ES-003-07) is listed as a minor modification per 15A NCAC 02Q .0515. • Added footnotes specifying compliance dates for MACT Subpart DDDDD.
7 – 10	2.1 A	7 – 11	2.1 A	Removed No. 5 and No. 6 fuel oil from Natural Gas/No. 2 fuel oil-fired boiler (ID No. ES-001-01) throughout entire condition.
7	2.1 A.1 Regulations Table	7	2.1 A.1 Regulations Table	Removed reference to requirements under 15A NCAC 02D .1109 when firing No. 5 and No. 6 fuel oil in natural gas/No. 2 fuel oil-fired boiler (ID No. ES-001-01).
8	2.1 A.2.d through f	--	--	Removed monitoring, recordkeeping, and reporting (MRR) requirements under 15A NCAC 02D .0516 when firing No. 5 and No. 6 fuel oil in natural gas/No. 2 fuel oil-fired boiler (ID No. ES-001-01).
8 – 9	2.1 A.3.d through f	--	--	Removed MRR requirements under 15A NCAC 02D .0521 when firing No. 5 and No. 6 fuel oil in natural gas/No. 2 fuel oil-fired boiler (ID No. ES-001-01).
9 – 10	2.1 A.4	8	2.1 A.4	Removed requirements under 15A NCAC 02D .1109 when firing No. 5 and No. 6 fuel oil in natural gas/No. 2 fuel oil-fired boiler (ID No. ES-001-01) and updated permit condition.
--	--	8 – 11	2.1 A.5	Added permit condition for 15A NCAC .1111 for 40 CFR 63, Subpart DDDDD, "NESHAP for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters."
11 – 14	2.1 B	11 – 14	2.1 B	Replaced the term formaldehyde CMPU with formaldehyde process throughout permit condition to be consistent with terminology in Section 1.0 and 40 CFR Part 63 Subpart G.

Previous Permit		New Permit		Description of Changes
Page No.	**Section**	**Page No.**	**Section**	
11	2.1 B Regulations Table	11	2.1 B Regulations Table	• Removed reference to TRE. The Permittee has elected to comply with MACT Subpart G using a catalytic oxidizer to achieve at least 98% in HAPs or an exhaust concentration of 20 ppm. • Removed reference to 15A NCAC .0958. The rule is no longer applicable state-wide, effective November 1, 2016.
14	2.1. B.2	11	2.1 B.1	Rearranged permit to follow the numerical order of the rules.
11 – 13	2.1 B.1	11 – 14	2.1 B.2	Modified permit condition for 40 CFR 63 Subpart G requirements for Group 1 process vents in the formaldehyde process to make it consistent with the same requirements for the Hexamine CMPU under Section 2.1. G.3.
14	2.1 C Regulations Table	14	2.1 C Regulations Table	Removed reference to 15A NCAC .0958. The rule is no longer applicable state-wide, effective November 1, 2016.
15	2.1 D Regulations Table	15	2.1 D Regulations Table	Removed reference to 15A NCAC .0958. The rule is no longer applicable state-wide, effective November 1, 2016.
15 – 16	2.1 E Regulations Table	16	2.1 E Regulations Table	Removed reference to 15A NCAC .0958. The rule is no longer applicable state-wide, effective November 1, 2016.
16	2.1 E.1.b	16	2.1 E.1.b	Modified permit condition for 40 CFR 63 Subpart G requirements for Group 2 transfer operations in the formaldehyde CMPU to make it consistent with the same requirements for the Hexamine CMPU under Section 2.1. G.5.
16	2.1 F	--	--	Removed Section 2.1 F (Reserved) and renumbered permit accordingly.
16 – 17	2.1 G Regulations Table	16 – 17	2.1 F Regulations Table	Removed reference to 15A NCAC .0958. The rule is no longer applicable state-wide, effective November 1, 2016.
20	2.1 G.4.f	--	--	• Removed requirements for Ketone Aldehyde process. The Permittee no longer operates this process. • Renumbered the permit accordingly.
--	--	19	2.1 F.3.c	Added requirements for Advanced Notification of Process Change, which is required when going from a Group 2 to Group 1 emission point under the MON.
20	2.1 G.4.g	20	2.1 F.4.f	Updated testing condition to reflect most current permitting language.
21 – 22	2.1 H Regulations Table	21 – 22	2.1 G Regulations Table	• Rearranged regulations table to follow the numerical order of regulations. • Removed reference to 15A NCAC .0958. The rule is no longer applicable state-wide, effective November 1, 2016.
25 – 27	2.1 H.4 and 2.1 H.5	22 – 24	2.1 G.1 and 2.1 G.2	Moved permit conditions for 15A NCAC .0515 and 15A NCAC .0521 so that the permit followed the numerical order of the regulations.

Previous Permit		New Permit		Description of Changes
Page No.	**Section**	**Page No.**	**Section**	
26 – 27	2.1 H.5.d and e	23	2.1 G.2.d and e	Updated monitoring requirements to reflect current permitting language.
22 – 24	2.1 H.1	24 – 26	2.1 G.3	Modified permit condition for 40 CFR 63 Subpart G requirements for Group 1 process vents in the Hexamine CMPU to make it consistent with the same requirements for the formaldehyde process under Section 2.1. B.2.
24	2.1 H.2.e	27	2.1 G.4.d	Updated testing condition to reflect most current permitting language.
28	2.1 I Regulations Table	29	2.1 H Regulations Table	Removed reference to 15A NCAC .0958. The rule is no longer applicable state-wide, effective November 1, 2016.
29 – 33	21 J	30 – 32	2.1 I	Removed No. 5 and No. 6 fuel oil from natural gas/No. 2 fuel oil-fired back-up boiler (ID No. ES-001-01T) throughout entire condition.
29	2.1 J Regulations Table	30	2.1 I Regulations Table	• Removed reference to 40 CFR 60 Subpart Dc. The back-up boiler (ID No. ES-001-01T) is not subject to NSPS. • Removed reference to avoidance of 15A NCAC 02D .0530 for NOx emissions. With the removal of No. 5 and No. 6 fuel oil, the back-up boiler no longer exceeds the PSD significant emission rates for NOx.
30	2.H J.2.d and e	--	--	Removed MRR requirements under 15A NCAC 02D .0516 when firing No. 5 and No. 6 fuel oil in natural gas/No. 2 fuel oil-fired back-up boiler (ID No. ES-001-01T).
30 – 31	2.1 J.3.d through f	--	--	Removed MRR requirements under 15A NCAC 02D .0516 when firing No. 5 and No. 6 fuel oil in natural gas/No. 2 fuel oil-fired back-up boiler (ID No. ES-001-01T).
32 – 33	2.1 J.6	--	--	Removed permit condition for 40 CFR 60, Subpart Dc. The back-up boiler (ID No. ES-001-01T) is not subject to NSPS.
--	--	31	2.1 I.4	Added an avoidance condition for 40 CFR 60, Subpart Dc for the back-up boiler (ID No. ES-001-01T)
31 – 32	2.1 J.4	31 – 32	2.1 I.5	• Removed No. 5 and No. 6 as fuel for back-up boiler (ID No. ES-001-01T) throughout permit condition. • Removed requirements for calculating NOx emissions throughout permit condition. With the removal of No. 5 and No. 6 fuel oil, the back-up boiler no longer exceeds the PSD significant emission rates for NOx.
32	2.1 J.5.d	32	2.1 I.6.b	Updated monitoring and recordkeeping requirements for back-up boiler (ID No. ES-001-01T) under avoidance of 15A NCAC 02D .1109.
33	2.1 K Regulations Table	33	2.1 J Regulations Table	Removed reference to 15A NCAC .0958. The rule is no longer applicable state-wide, effective November 1, 2016.

Previous Permit		New Permit		Description of Changes
Page No.	**Section**	**Page No.**	**Section**	
--	--	34	2.2 A.1.a.ii.(B)	• Added requirement to make weekly visible observations for leaks for pumps in light liquid service. • Renumbered permit condition accordingly.
40	2.2 B Regulations Table	40	2.2 B Regulations Table	• Rearranged regulations table to follow the numerical order of regulations. • Removed reference to 15A NCAC .0958. The rule is no longer applicable state-wide, effective November 1, 2016.
41 – 42	2.2 B.2. B.3, and B.4	40 – 41	2.1 B.1, B.2 and B.3	Moved permit conditions for 15A NCAC 02D .1100, 15A NCAC 02D .1806, and 15A NCAC 02Q .0317 so that the permit follows the numerical order of the regulations.
42	2.2 B.3.b	41	2.2 B.1.b	• Removed references to No. 5 and No. 6 fuel oil in natural gas/No. 2 fuel oil-fired back-up boiler (ID No. ES-001-01T). • Clarified permitting language.
41	2.2 B.2	41	2.2 B.3	Removed No. 5 and No. 6 as fuel for back-up boiler throughout permit condition.
--	--	42	2.3	Added permit condition for 112(r) requirements.